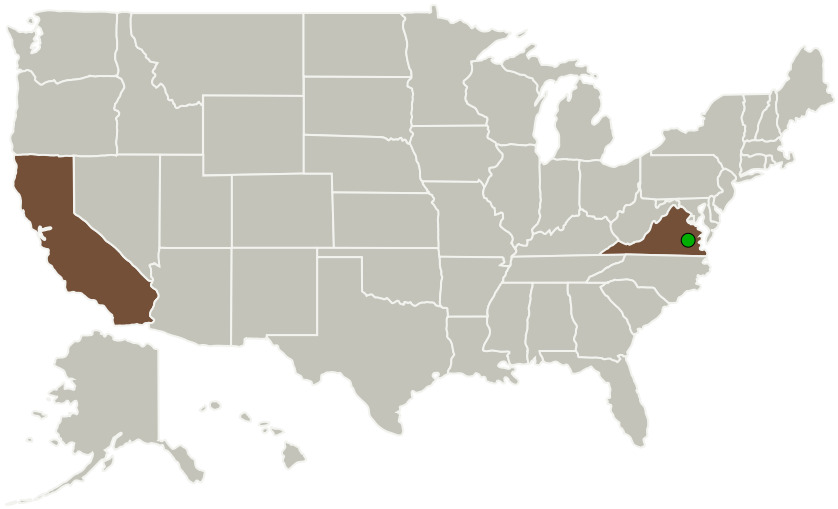
Manufacturing For Design of Titanium Alloys, Phase I

Completed Technology Project (2017 - 2017)

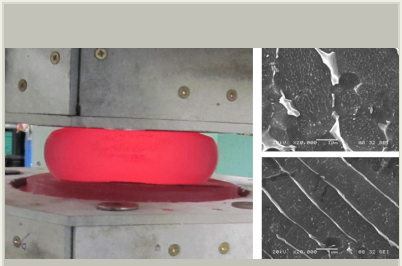
Project Introduction

This SBIR Phase I program proposes to exploit the tremendous benefits that could be offered by the development of a microstructural refinement and control technology for titanium alloys. A severe plastic deformation (SPD) technology based on hot die isothermal forging technologies will be explored in this work. The goal is to demonstrate a practical, production level manufacturing approach to producing bulk-sized titanium alloy components with refined and controllable microstructure-properties. Higher performance titanium alloys would be particularly advantageous for next generation airframe and engine structures and components seeking improved structural efficiency. The effect of different thermomechanical conditions to achieve the requisite microstructure-properties also needs to be understood in order to identify the optimum process.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



Manufacturing For Design of Titanium Alloys, Phase I Briefing Chart Image

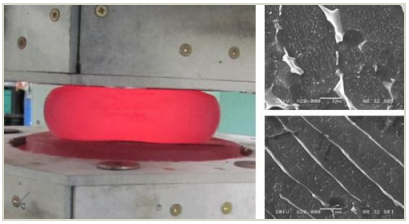
Table of Contents

Manufacturing For Design of Titanium Alloys, Phase I

Completed Technology Project (2017 - 2017)

Primary U.S. Work Locations	
California	Virginia

Images



Briefing Chart Image
Manufacturing For Design of Titanium Alloys, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/130370)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Transition45 Technologies, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

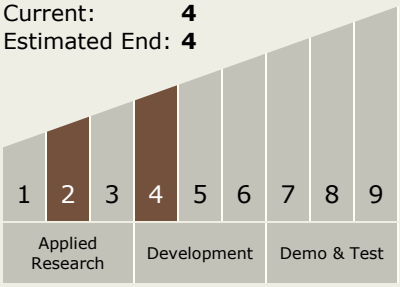
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Edward Chen

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.1 Manufacturing Processes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System